

AN
ESSAY

ON

D I F F I C U L T L A B O U R S .

PART SECOND.

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CLASS SECOND.

D I F F I C U L T L A B O U R S.

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C H A P. VIII.

S E C T. I.

ON THE FILLET, FORCEPS, AND VECTIS.

W H E N men, first collected into societies, had provided for their subsistence, they would endeavour to amend their state, by removing such evils and inconveniencies as were most urgent, either from their importance or frequency. Next to those arts by which the means of support were acquired, that of medicine would be of principal consideration, as from the nature of their employments, hunting, fishing, pastoral or agricultural, men must have been liable to diseases and to injuries,

which by accident or trial, they would learn some method of relieving; and he that should have acquired the greatest collection of knowledge, or the most dexterous method of applying it to useful purposes, would have become a physician. But the origin and progress of that branch of medicine of which we are treating, would be somewhat different. When the customs and manners of life were simple, and not much disposed to produce diseases, difficulty or danger in the parturition of women would seldom occur; and notwithstanding the distress with which they might sometimes be accompanied, the general termination of labours would be easy and safe. In the very few cases which might require more than ordinary assistance, there were none to afford it; and those women who could not bring forth their children by their own efforts, were suffered to die without any attempts being made to relieve them, according to the relations which are given of the people of some countries, even at this day.

As mankind advanced in civilization, the evils attending parturition would probably increase, though ignorance or inability to give relief might long continue; but the supplica-
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tions for assistance, and the affections of men, would not permit them to remain unconcerned spectators of the misery of those, to whom they were indebted for the chief part of their happiness. They gave such aid as their information or ingenuity enabled them to devise, and this, in the first instance, consisted of ceremonies and amulets, or medicines, to which some mysterious properties were attributed, as the skins and some other parts of serpents, the eagle stone, the blood-stone, the stony substance found in the head of a shark, with many others of the like kind; and such things might succour the minds of women, strongly impressed with a sense of their utility, overwhelmed at the same time with extreme pain and apprehension. In times more enlightened, for every kind of distress religion offered its consolations, by soothing the mind, by teaching mankind, when oppressed with difficulties, to use their own endeavours, the necessity of submitting to evils which could not be prevented or avoided, and by encouraging with the hope of happy events. After the discovery of the mechanic arts, these were applied to the exigencies of every occasion; and when the suf-

ferings of women in child-birth could no longer be endured, attempts were made to relieve them by extracting, without regard to its safety, the head of a child which could not be expelled by the efforts of the mother; and for this purpose the first kind of *forceps* was invented and used. The same motives of compassion or affection which led to the wish of relieving women, would readily extend to children; and, to combine the interests of both, fillets and the *forceps*, now in common use, were contrived. When the head of a child was found to be too large to pass through a very small or a distorted *pelvis* with the help of such contrivances, there was no relief to be obtained except the head of the child was lessened, and for this purpose, perforators and crotchets of various kinds were invented. The intrepidity of some man seeing no other way of giving relief, or the desperate resolution of some woman frantic with her sufferings, might lead to a more summary way of obtaining it; and, with a determination to free her from the cause of her misery, or to put an end to her existence, a child might have been extracted through a wound made into the part which contained it,

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it, and the manner of performing the Cæsa-rean operation would be shewn.

In some times and countries in which the *forceps* and other instruments of that kind were not known, or their use not fully understood, and afterward, in some cases not thought suitable for their use, it became a custom in many difficult labours, by whatever cause produced, to return the presenting head, to pass the hand into the *uterus*, to turn and deliver the child by the feet. But this operation of turning could only be performed under very limited circumstances; for if the head of the child was very low in the *pelvis*, or the *uterus* strongly contracted round its body, it could not be done, or not without defeating the very purpose for which the operation was performed, producing at the same time great danger to the parent. Yet cases may occur in which by turning the child, the chance of saving its life is greater than can be gained by the use of any instrument, of which the following is an example.

Many years ago I attended a patient in two labours, in both of which there was a necessity of delivering with instruments, on account of the smallness and distortion of the *pelvis*,

and neither of the children could be preserved. In her next pregnancy I made a proposal to bring on premature labour, to which she and her friends would not consent, and I was dismissed from my attendance. In the course of twelve or fourteen years she had five more children, not one of which was born living. In the forty-sixth year of her age she proved with child, and again applied to me. When her labour came on, the first stage was suffered to proceed without interruption, but when the membranes broke, I without delay passed my hand into the *uterus*, and easily brought down the feet and body of the child; but the head being stopped by the narrowness of the superior aperture of the *pelvis*, I was obliged to exert, and to continue, much force before it could be extracted. The child was born with very little appearance of life; but by the strenuous use of the common means it was recovered. On the left parietal bone there was a depression of considerable extent, and to my apprehension of full one inch in depth; but the depressed part gradually rose, in the course of a few months the bone regained its natural form, and the child was for several years in good health.

The woman recovered without any untoward circumstance.

But the success of such attempts to preserve the life of a child is very precarious; and the operation of turning a child under the circumstances before stated, is rather to be considered among those things of which an experienced man may sometimes avail himself in critical situations, than as submitting to the ordinary rules of practice.

SECTION II.

ON FILLETS.

THE fillet used in the practice of midwifery is a single band, intended to be fixed upon the head of a child detained in its passage through the *pelvis*, for the purpose of extracting the head.

It has been supposed that fillets were used in the practice of midwifery as early as the time of *Hippocrates*; but whenever they were invented, they have undergone a variety of changes,

changes, by which it was intended to gain some advantage, or to avoid some inconvenience. Fillets were constructed of silk, cotton, linen, or leather of divers kinds, strengthened or rendered more commodious by the addition of cane, whalebone, wire, or very thin and narrow plates of iron, variously braided and worked together according to the opinion or judgment of the contriver.

The manner of applying the fillet was, by conducting it to some fixed point, or round the circumference of the head of a child, as high up in the *pelvis* as could be reached; then, after twisting the two ends together to acquire a firm hold, we were taught to extract, in a proper direction, with all the force the fillet enabled us to use, or the necessity of the case might require.

The peculiar advantages expected to be derived from fillets were these. They were supposed to be applicable with great facility in every direction of the head, or when this was too high to allow of the use of any other instrument recommended with the same intention; to supply us with sufficient power to extract the head when detained an unreasonable time, by any cause,
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to the hazard of the mother or child ; and to do less injury to either, on account of the softness and pliability of the materials of which they were composed.

But experience has fully proved that a fillet of any kind could not be applied without much difficulty and trouble ; that when applied it was very apt to slip ; that when it remained fixed, it was often inadequate to the purpose of extracting the head ; that it created new difficulties, or added to those which before existed, by changing the position of the head ; and that the injury done to the mother or child was not in proportion to the hardness of the materials of which instruments were constructed, but according to the violence with which they were used.

For these reasons fillets of every kind gradually declined in estimation, and they are now wholly neglected. They may be considered among the first attempts of art to give relief, which have been superseded by other contrivances, equally safe and more efficacious.



SECTION III.

ON THE FORCEPS.

THE *forceps* used in the practice of midwifery, is an instrument composed of two equal parts, each part consisting of a blade and handle, so formed that, when applied separately upon the head of a child obstructed in its passage through the *pelvis*, they may be connected together, and used as two alternate or conjoined levers, for the purpose of extracting it.

Forceps have been made of wood or silver, but generally of iron properly tempered, and when used, should be covered with smooth and thin leather, which without any significant increase of bulk, renders their introduction more easy, and takes off, both in appearance and reality, the asperity of the instrument. Each blade must be introduced separately, but in such directions, that when introduced they may be antagonists to each other; and there have been different contrivances to keep them fixed together.

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It would be difficult to determine the time when *forceps* were first used, but we have very early accounts of two kinds, with one of which it was intended to extract the child, without regard to the injury which might be done to it, and with the other to extract and preserve its life. The first was armed with teeth or sharp protuberances on the internal surface which grasped the head; but those of the second kind had no protuberances, and when used, were clothed with linen or some soft material, to prevent their doing any injury to the child. The first are never used at the present time, and would have been forgotten, except for the patterns which are preserved in the collections of those who have taught the art. Of the latter kind there is an endless variety, but every variety regards one or other of these conditions; their length, their strength, or their different degrees, or kinds of curvature.

From the length of the *forceps* formerly made, we may conclude that it was usual to apply them before, or as soon as the head of the child had entered the superior aperture of the *pelvis*; and from their strength, that it was thought necessary to provide for the exertion

exertion of great force. The common curvature was varied according to the opinion entertained of the form and dimensions of the head of a child at the time of birth ; but the lateral curvature was given for the accommodation of the instrument to the form of the *pelvis*, or for lessening the pressure upon, and of course the danger of lacerating, the external parts, when the child was extracted. As the *forceps*, though well applied, sometimes slipped from the head when brought into action, a groove, with a slight eminence on each side, was proposed to be made on that part of the internal surface which embraced the head, to prevent that accident, and to allow of a change in the manner of acting, by admitting some degree of rotation.

Forceps have also been contrived in such a manner that one blade received the other, and these were called male and female. They have also been made with hinges or joints between the handle and blade of each, answering no other purpose than that of concealing them, that there might be an opportunity of performing the operation with them in a clandestine manner. But as the reasons for using the *forceps* will justify the operation to
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the most severe examiner ; and as these may be explained without adding to the terror or distress either of the patient or her friends, there never can be occasion for concealment ; which, in these cases, ought to raise a suspicion of the judgment or integrity of those who should attempt to practise it. There is, in truth, more frequently a necessity of resisting the solicitations both of patients and friends, urging us to the use of instruments, than of persuading them to comply with our proposals when we think them needful.

Besides the different kinds of *forceps* which consist of two blades, others have been contrived with three. By those who supposed labours to be chiefly obstructed or rendered difficult by the inflexion of the *os coccygis*, a third blade was added for the purpose of raising the head of the child over that part. But those who supposed difficulties to be occasioned by the *sacrum* jetting, and of course projecting the head of the child over the *symphysis* of the *ossa pubis*, added a third blade for the purpose of bringing back the head thus projected, into a right line with the cavity of the *pelvis*, before any attempt was made to extract

tract it with the other two blades. Whatever credit may be due to the authors of these contrivances for their ingenuity, the third blade has certainly been added on erroneous principles; and *forceps* thus constructed, would not only be embarrassing in practice, but in every case, as far as can be judged, useless or injurious.

It is remarkable that *forceps* were made of an unnecessary length, when we were forbid to apply them before the head of a child had descended very low into the *pelvis*; and they were made very strong, when it was well understood that far less force than they enabled us to use, could be exerted with propriety or safety. They were however by degrees made shorter and less cumbersome, and about the year 1748, Dr. *William Smellie*, who was eminent in practice, and as a teacher of midwifery in *London*, altered them, and brought into general usage a kind of *forceps*, more convenient than any before contrived. These before they are curved do not measure more than twelve inches from the end of the handle to the extremity of the blade; and, when properly curved, little more than eleven inches, of which the handle measures near five inches.

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The widest part of the blade measures about one inch and five eighths, and this gradually declines towards the handle, preserving at the same time the flatness of the blade till it meets the handle. Being simple in their construction, applicable without difficulty, and equal to the management of every case in which the *forceps* ought to be used, I have adapted the following rules to them. But if *forceps* of any other kind should be preferred, though the principles will hold good, the rules must be varied, according to the discretion of the person who may perform the operation.

SECTION IV.

GENERAL OBSERVATIONS.

It has been long established as a general rule in this country, that the use of instruments of any kind ought not to be allowed in the practice of midwifery from any motives of eligibility. But when, from any cause, the parent becomes unequal to the expulsion of the child, the assistance of art,

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by whatever means it can be afforded, is justifiable by necessity; because without such assistance the parent would die undelivered, and with her life, that of the child would also be inevitably lost. Yet it behoveth every person who may use instruments in the practice of midwifery, to be well convinced of this necessity before they are used, and to be extremely careful in their use; that he does not create new evils, or aggravate those which might be existing. But though it be our duty to avoid the use even of those instruments which are intended to be employed without injury either to the mother or child, it would, on the other hand, be absurd to defer their use till the child were dead, and the mother reduced to a state, not of apprehended, but of real danger; or, which is worse, that if she should survive, her life would be rendered miserable from the consequences of mischief done before the instruments were used.

When it is proposed to deliver women with the *forceps*, the intention is, to supply, by their means, the total want, or deficiency of the natural pains of labour; in other words, to extract the head of a child which cannot
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be expelled by the efforts of the mother. But so long as these efforts continue with any degree of vigour, there is always reason to hope that they will ultimately accomplish the effect of expelling the child without any artificial assistance. We are moreover to recollect, that in labours of long continuance there will often be a temporary cessation of the pains, without any apparent reason or alarming symptoms; but that cessation of the pains which is the consequence of long continued, fruitless action, and of great debility, is to be considered as the only justification of the use of the *forceps*.

Before the completion of the first stage of a labour, that is, before the *os uteri* be completely dilated, and the membranes broken, the use of the *forceps* can never come under contemplation. Because the difficulties before occurring, may depend upon causes which do not require their use; or, if required, they could not be applied with safety or propriety before those changes were made.

There is infinitely greater difficulty in deciding upon the proper case and time when the *forceps* ought to be applied, than in applying or using them; but it is universally

agreed, that the lower the head of the child has descended into the *pelvis*, the easier will their application be, and the operation with them more certain and successful. With a view to this observation, a practical rule has been formed, that the head of a child shall have rested for six hours, as low as the *perinæum*, that is in a situation which would allow of their application, before the *forceps* are applied, though the pains should have ceased during that time. This, with other rules, was intended to prevent the rash or unnecessary use of the *forceps*, and certainly time is, in these cases, a very good corrector of practice.

The *forceps* ought to be applied over the ears of the child, because when thus placed, there is the least likelihood of doing injury to the child, and they enable us to act with the greatest advantage and safety to the mother. It must therefore be improper to attempt to apply them before an ear can be felt, either because the head is too high to allow us to reach that part, or because it is so closely locked in the *pelvis*, that there is not sufficient room to pass the finger for that purpose between the head of the child and the *pelvis*. If an ear of the child can be felt, the
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case is always manageable with the *forceps*; but when the question, whether they ought to be applied, comes under consideration, the ears are not turned to the sides of the *pelvis*, but that ear which is to guide us will be found towards the *pubes*. However we are always to remember that the *forceps* are not to be applied because we have the power of using them, but because the necessity of the case is such as to require their use. But cases sometimes occur in practice in which we may despair of the ability of the mother to expel the child; and which, though not such as have been stated as suitable for the use of the *forceps*, become suitable, merely by waiting a certain number of hours, and a repetition of the slight efforts of the parent. In that desponding state with which every tedious and difficult labour is accompanied, I have also found the patient very much encouraged by having some distant time held up to her when she should be assisted, if the labour were not before concluded: as this encourages her, by giving to her imagination a period to her suffering.

Every change in the position of the head, and every alteration in the construction of the

forceps from those already stated, will require some difference in the manner of applying and using them. But the preference, which ought in reason to be given, of one kind of *forceps* to another, is merely because one instrument may be more handy and convenient than another: for an intelligent and skilful man would be able to apply and use those of any form or size, in such a manner that they should answer his purpose; as an expert surgeon would be able to amputate a limb with a knife of any kind. No consideration of advantage to be gained by instruments of any particular structure ought to lessen our attention, as the success of every operation must necessarily depend upon the justness of the idea entertained of it in the mind of the person who may perform it, and the dexterity with which the instrument may be guided by his hands.

When we have determined on using the *forceps* according to the preceding observations, corrected by our own judgment; and when we have represented our opinion, and explained the reasons for it to the friends of the patient, as is customary in all other operations, we must prepare for this in the following

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ing manner:—The patient is to be placed upon her left side, across the bed on which she is laid, with her knees drawn up to the *abdomen*, and a pillow placed between them, and very near to the edge of the bed; that we may be able to reach the patient with all convenience, and possess the free and uninterrupted use of our own hands. The instruments, being warmed in water, and smeared with some unctuous application, are to be so placed that they can be readily taken hold of by ourselves, or handed to us by an assistant.

SECTION V.

ON THE APPLICATION OF THE FORCEPS.

THE first part of the operation consists in passing the fore-finger of the right hand between the *ossa pubis* and the head of the child to the ear; then taking the part of the *forceps* to be first introduced, by the handle, in the left hand, the point of the blade is to be slowly conducted between the head of the child and the finger, till the instrument touches the ear.

There can be no difficulty or hazard in carrying the instrument thus far, because it will be guided, and in some measure shielded, by the finger. But the farther introduction must be made with a slow semi-rotatory motion, keeping the point of the blade close to the head of the child, by raising the handle towards the *pubes*. In this manner the blade must be carried along the head till the lock reaches the external parts near the anterior angle of the *pudendum*.

The point of the blade, while introducing, sometimes hitches upon the ear of the child, and then it requires a little elevation, which is given by raising the handle; but when it has passed the ear, and is beyond the guidance of the finger, should there be any check to the introduction either of this or the other blade, it should be withdrawn a little, to give us an opportunity of discovering the cause of the obstacle, which we must never strive to overcome with violence. When the first blade is properly introduced, it must be held steadily in its place by pressing the handle towards the *pubes*, and it will be a guide in the introduction and application of the second blade.

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Let the second blade be introduced in this manner. Keep the blade first introduced in its place, with the two lesser fingers of the left hand, and carry the fore-finger of the same hand, between the *perinæum* and head of the child, as high as you can reach. Then take the second blade of the *forceps* by the handle, in the right hand, and, conveying the point between the finger placed within the *perinæum*, and the head of the child, conduct the instrument with the precautions before mentioned, so far that the lock shall touch the anterior edge of the *perinæum*, or even press it a little backwards. In order to fix the two blades thus introduced, that which was placed towards the *pubes* must be slowly withdrawn, and carried so far backwards, that it can be locked with the second blade retained in its first position: and care must be taken that nothing be entangled in the lock by passing the finger round it. When the *forceps* are locked, it will be found convenient to tie the handles together, with sufficient firmness to prevent them from sliding or changing their position, when they are not held in the hand, but not in such a manner

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as to increase the compression upon the head of the child.

Should the blades of the *forceps* be introduced so as not to be opposite to each other, they could not be locked; or if when applied the handles should come close together, or be at a great distance from each other, they would probably slip, or there would be a failure of some kind in the operation, as the bulk of the head would not be included, or they would be fixed on some improper part of the head; though allowance is to be made for the difference in the size of the heads of children. But if a case be proper for the *forceps*, if they be well applied, and we were to act slowly with them, there would not be much risk of failure or disappointment.

The difficulty of applying the *forceps* is usually occasioned by attempting to apply them too soon, or by passing them in a wrong direction; or by entangling the soft parts of the mother between the instrument and the head of the child.

SECTION VI.

ON THE ACTION WITH THE FORCEPS
WHEN APPLIED.

It was before observed that the *forceps* when applied and fixed upon the head of a child, might be considered as a compound instrument which allowed of a separate action with either of the parts of which it was composed; or of a conjunct action, as if the two parts formed one instrument. The separate action with either part will be on the principle of the lever; but that with both the blades will be simple traction. Yet in practice we shall find very few cases in which it will not be necessary to exercise or to combine both these kinds of action.

As it is the intention, when the *forceps* are used, to supply with them the total want or insufficiency of the natural pains of labour, the whole power or force which the instrument enables us to use, ought not to be exerted in the first instance, but such a degree as any individual case may require; first trying a moderate degree of force, and increasing it slowly and deliberately, according to the exigence

exigence of each case. Because the impediment may not be great, and the point of obstruction may exist only at one part; and that being surmounted by one, or a few actions with the instrument, there would be no cause for acting any more. In some cases also, though the pains had entirely ceased, they will return with force sufficient to expel the child, from the irritation made by the mere application of the instrument. But when the *forceps* have been applied, they should not be removed before the head is expelled, lest the pains should cease, and we should be obliged to apply them again.

The effects of the *forceps*, or the consequences which result from their action, are these; compression of the head, descent of the head, inclination of the face to the hollow of the *sacrum*, extraction of the head. As the descent of the head precedes the inclination of the face to the hollow of the *sacrum*, it would be improper to attempt to change the position of the head before it has descended, and it is afterwards unnecessary; because if the action with the *forceps* be slow, and, according to the direction of the handles, the position of the head becomes altered in proportion to its descent, without
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any aim on the part of the operator, and without his guidance.

When the *forceps* are first locked, they are placed far backwards, with the lock close to, or just within the internal surface of the *perinæum*; and they can have no support backwards, except the little which is afforded by the soft parts. The first action with them should therefore be made by bringing the handles, grasped firmly in one or both hands to prevent the instrument from playing upon the head of the child, slowly, towards the *pubes*, till they come to a full rest. Having waited a short interval with them in that situation, the handles must be carried back in the same slow but steady manner to the *perinæum*, exerting, as they are carried back, a certain degree of extracting force; and after waiting another interval, they are again to be carried towards the *pubes*, according to the direction of the handles. Throughout the operation, especially the first part, the action of that blade of the *forceps* originally applied towards the *pubes*, must be stronger and more extensive than the action with the other blade, this having no *fulcrum* to support it, and chiefly answering the purpose of regulating the action

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with the other blade. If there were any labour pains when the operation was begun, or should they come on in the course of it, the *forceps* should only be acted with during the continuance of the pains; the intention being not only to supply the want or insufficiency of the pains, but to imitate also the manner in which they return.

By a few repetitions of this alternate action and rest before described, we shall soon be sensible of the descent of the head; and it will be proper to examine very frequently, to know the progress made, that we may not use more force than needful, nor go on with more haste than may be expedient or safe. In every case we ought to proceed slowly and circumspectly, not forgetting that a small degree of force, continued for a long time, will in general be equivalent to a greater force hastily exerted, and with infinitely less detriment either to the mother or child. But after some time, should we not perceive the head to descend, the force hitherto used must be increased, till it be sufficient to overcome the obstacles to the delivery of the patient.

It was before observed, as the head of the child descended, that the face would be accordingly

cordingly turned towards the hollow of the *sacrum*, without any aim or assistance on our part. Of course the position of the handles of the *forceps*, and the direction in which we ought to act with them should alter; for they becoming first more diagonal or oblique, with respect to the *pelvis*, and then lateral, every change in their position will require a differently directed action, because the handles should ever be antagonists to each other. In proportion also to the descent of the head, the handles of the *forceps* should approach nearer to the *pubes*; so that in the beginning of the operation, though we acted in the direction of the cavity of the *pelvis*, towards the conclusion we should act in that of the *vagina*. When we feel that we have the command of the head by its being cleared of the *pelvis*, and the external parts begin to be distended, we ought to act yet more slowly, especially in the case of a first child, or there would be great danger of a laceration of the soft parts; and this can only be prevented by acting very deliberately, and in the direction of the *vagina*; by giving the parts time to distend; by duly supporting the *perinæum*, which is the part chiefly in danger, with the palm of the hand; by

by soothing and moderating the hurry and efforts of the patient ; and, in some cases, by absolutely resisting for a certain time the passage of the head through the external parts. When the head of the child is born the *forceps* are to be removed, the delivery being completed as far as their assistance was required, and the remaining circumstances are to be managed as if the labour had been natural.

On the whole it appears that necessity, and not any sense of eligibility or expediency, will justify the use of the *forceps*; that when such necessity exists, their use is not only justifiable but highly advantageous; that with care they may be safely applied; that slowness and steadiness in our action with them will effectually secure both the parent and child against untoward accidents ; but that no skill or knowledge can prevent mischief or disappointment, if the operation with them be performed with hurry or violence.

SECTION VII.

ON THE APPLICATION OF THE FORCEPS,
UNDER VARIOUS CIRCUMSTANCES.

WE have before considered the manner of applying and using the *forceps*, when the head of the child presented in the most natural way, that is, with the face inclining towards the *sacrum*. But they may be equally necessary in other positions of the head, that especially which is in the next place most frequent, when the face is inclined towards the *pubes*. This position is discoverable by the readiness with which we can feel the greater fontanel in a common examination, by the direction of the ear, and often by feeling distinctly the features of the face tending towards the *symphysis*.

It was before observed, that this position of the head only constituted a variety of natural labours, as far as position was concerned in the definition. We are not, therefore, to be guided in our opinion of the propriety of using the *forceps* by any position of the head

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of the child, but by the necessity of any case, proved by the absolute inability of the mother to expel the child. Should such necessity exist with this position of the head, the *forceps* are to be applied, in the manner before described, over the ears of the child. But when they are applied we must act with them with the greatest caution ; for, having a different and less perfect hold of the head, they are apt to slip, and, acting with less advantage, the operation, in this position of the head, must be more precarious. But if we succeed, when the head, thus situated, is brought so low as to distend the external parts, there will of course be greater danger of a laceration, if we are ever so much upon our guard ; because, in extracting the head, the chin of the child should be cleared of the *ossa pubis*, before the hind head is suffered to slide over the *perinæum*, which will very much increase the distention, and produce the same effect as if the arch of the *ossa pubis* was too small to receive the head of the child.

The same observations are also generally true when the face of the child presents ; or when, together with the head, there are one or both arms. For though in such cases there might be

be a necessity for, and a propriety in, using the *forceps*, the operation with them would neither be so certain or easy as in the position of the head first stated.

In labours attended with convulsions, or dangerous hemorrhage; or when from any other urgent cause it may be necessary to hasten the delivery of the patient, to free her from immediate danger, should the *forceps* be used, the general rules will be sufficient to guide us, varying and suiting our conduct to the exigence of any particular case.

Lastly, when there are signs of imminent danger, however averse we may be to the use of instruments, we may be induced to try the *forceps*, though a case might not be altogether such as we might choose for their application; merely to take an indifferent chance of saving the life of a child, which must otherwise be inevitably lost. In such cases, we must advert to the general principle, and make our attempts in a manner consistent with the safety of the parent; and, from motives of prudence, prepare the friends for that disappointment which it may not be in our power to prevent.

SECTION VIII.

ON THE VECTIS.

THE *vectis* used in the practice of midwifery is an instrument consisting of one blade, slightly curved, and a handle, similar in form to one of the blades of the *forceps*.

The true origin of this instrument, or time when it was first discovered, is not known; but before any accounts of the *vectis* were published, some difficult cases were recorded, in which women had been delivered with one blade of the *forceps*, which might then be well considered as a *vectis*, though not called by that name. But when only one blade of the *forceps* had been used, the operation was mentioned as something extraordinary, to shew perhaps the judgment or skill of the person who performed it, and not as leading to a rule of practice. It is probable that the instrument used by the *Chamberlens* in the last century was the *vectis*; but this is conjecture, for, after much inquiry, I have not been able to discover that any of
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them left either a pattern or description of the instrument which they used. In the second volume of *Heister's Surgery* there is a delineation of a true *vectis*, recommended to him by *Palfyn*, a surgeon of eminence at *Ghent*; but neither this instrument nor its description engaged much attention, nor was the *vectis* generally known before the year 1750. For though it had been used before that time by *Rhonhuysen*, a surgeon at *Amsterdam*, after whose name it has been since called, it was reserved by him with great secrecy, to his own credit and advantage; and, after his death, it became the property of his only daughter, from whom it was purchased by *De Bruyn*, an eminent surgeon of the same place. It appears that *De Bruyn* concealed the secret with as much caution as *Rhonhuysen*; or that he instructed students in the use of the *vectis* at a considerable price, and with an obligation not to divulge to others what he taught them. The names of other gentlemen who changed or improved the instrument soon became known; and, annexed to a paper written on this subject by the celebrated professor *Camper*, in the fifteenth volume of the *Memoirs of the Royal Academy*

of Surgery, is a plate representing the *vectes* used by *Rhonhuysen*, *Boom*, and *Titsing*.

The advantages arising from the use of the *vectis* in the hands of *De Bruyn*, ostentatiously urged, appearing to be very great, *Vischer* and *Vander Pol*, two physicians at *Amsterdam*, from motives of pure benevolence, purchased the secret from *De Bruyn*, in the year 1753, and immediately published a description of the instrument, with directions for using it; but none of the papers printed on this subject in the Dutch language have ever been translated into our own. While the *vectis* remained a secret, the reports of the benefits obtained by it were probably much exaggerated, especially those of *De Bruyn*, though *Van Swieten* says he was an honest man; but, when it was divulged, and the positive and comparative merits of the *vectis* strictly examined, it retained its credit and estimation, in the opinion of many competent judges, in different parts of Europe.

When the *vectis* was very much used, and highly esteemed, at *Amsterdam*, as an invaluable improvement in the practice of midwifery, the *forceps* was the favourite instrument in this coun-

try, especially as altered by *Smellie*, who was then the principal teacher of the art in *London*. But the chief practice in this city was successively in the hands of Dr. *Bamber*, *Middleton*, *Nesbit*, *Cole*, and *Griffith*, some, if not all of whom, preferred the *vectis* to the *forceps*. To those gentlemen succeeded Dr. *John Wathen*, a man of great ingenuity and most pleasing manners, who reduced the size of the *vectis*, and frequently used it with a dexterity that has astonished me. In the year 1757, that most excellent charity for delivering poor women at their own habitations was established, and Dr. *John Ford* was the first physician appointed to conduct it. On every occasion which required instruments of this kind Dr. *Ford* used the *vectis*; and his coadjutors and successors, Drs. *Cooper*, *Cogan*, *Douglas*, *Sims*, *Dennison*, and *Squire*, with many others, have followed his example. From the deserved reputation of these gentlemen, who have at all times expressed their approbation of the *vectis* in preference to the *forceps*, many have been induced to try it, and the general opinion of its utility has increased. At the present time, all who are engaged in the practice of midwifery would

consider themselves as deficient, if they were not acquainted with the structure and manner of using the *vectis*; and some who, from education or habit, continue to use the *forceps*, are very willing to allow the equal, if not superior, value of the *vectis*.

SECTION IX.

ON THE DIFFERENT KINDS OF VECTES.

THE first *vectis* of which we had any knowledge was that of *Palfyn* before mentioned. The instrument purchased by *Vischer* and *Vander Pol* was made public in a pamphlet written in the Dutch language. In the account given by *Camper*, there appears to be some difference in the form, length, manner, and degree of curvature of the *vectes* used by *De Bruyn*, *Boom*, and *Titsing*. But if the power of the instrument was preserved, and the general principle of using it followed, it is probable that all those who used the *vectis* thought themselves at liberty to alter its form or to vary its dimensions.

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When the *vectis* was first known in this country, that described by *Heister* was preferred to those recommended by the surgeons at *Amsterdam*. The *vectis* used by Dr. *Cole* was, like one blade of the *forceps*, somewhat lengthened and enlarged. That of Dr. *Griffith* was of the same kind, with a hinge between the handle and blade; and that of Dr. *Watson* was like *Palfyn's*, but with a flat handle, and a hook at the extremity of the handle, which prevented its slipping through the hand, and might be occasionally used as a crotchet. Many other changes have been made in the construction of the instrument, but the *vectis* used by the gentlemen of the charity before mentioned is of the following dimensions:

The whole length of the instrument, before it is curved, is twelve inches and a half.

The length of the blade, before it is curved, is seven inches and a half.

The length of the blade, when curved, is six inches and a half.

The widest part of the blade is one inch and three quarters.

The weight of the *vectis* is six ounces and a half.

The handle is fixed in wood.

From

From this description, any person acquainted with the *forceps* could find no difficulty in forming a just idea of the *vectis*, or an artist in making it. It appears also that a single blade of the *forceps* might, in many cases, be used not inconveniently, instead of any other *vectis*, and would generally answer the purpose without the trouble of introducing the second blade, as I have often experienced.

With respect to the part of the blade of the *vectis* which ought to be curved, and the degree of curvature, there has been some difference of opinion; but this must relate either to the ease of introducing, or the advantage of acting. With a small degree of curvature, diffused through the blade, the instrument may be most easily introduced, nor can the degree of curvature required, on any principle, be very great. But if, together with the power of the lever, we aim at acquiring much extracting force, the curvature should be somewhat increased; because the two centres, on which the force used would rest, would be at those parts of the head on which the instrument might bear, and the part on which it would rest, whether the sides of the *pelvis* or the hand of the operator.

For

For rendering the introduction of the instrument more easy, and for preventing all the inconveniences which might arise from the difference of curvature, Dr. *Aitken*, of *Edinburgh*, contrived a *veētis*, which he has fancifully called the *living lever*. When this is at rest it is quite straight; but while it is introducing, by turning a screw in the handle, the blade is made in such a manner as to bend gradually forwards as the instrument is advanced, so that the extremity of the blade is always kept close to the head of the child, of whatever dimensions that may be. There is infinite ingenuity in the contrivance; but of the effect in practice I cannot speak, having never tried this instrument. But a gentleman informed me that, in a trial he made, the chain, on which the mechanism chiefly depends, broke, and he was obliged to finish the operation with a common *veētis*.

To lessen the pressure made by the instrument, when in action, upon the parts of the mother, on which it might bear, some person contrived two holes on a part of the blade, near the handle, through which a strong ribband or tape was to be passed, which being afterwards tied and pulled firmly, when the
instrument

instrument was acted with, was supposed to confine it firmly to the head of the child, and prevent or lessen the pressure which might otherwise be made upon the parts of the mother; but it appears that the same end may be answered better by the dexterous management of the instrument than by this contrivance.

SECTION X.

ON THE COMPARISON OF THE VECTIS WITH THE FORCEPS.

THE general principle of practice, that the use of no instrument is to be allowed, except in cases of absolute necessity, ought not to be infringed, because we entertain a high opinion of any instrument, or because we may have acquired dexterity in using it. That principle, founded in common sense as well as medical knowledge, and confirmed by daily experience, must be held inviolable. The real value of any instrument will be shewn by its efficacy to answer the purpose for which it may be used, and by the convenience with
which

which it can be managed, when its use is required.

There has been much verbal dispute among those who vindicated the superiority of the *veētis* to the *forceps*, and those who maintained the long established credit of the *forceps* against the encroachments of the *veētis*: but the comparison between the two instruments has never been brought fairly to an issue, which might have been done by a discussion of the two following questions.

Is it possible to deliver a woman, safely, with the *forceps*, in any case not manageable with the *veētis*?

Is it possible to deliver a woman, safely, with the *veētis*, in any case not manageable with the *forceps*?

We may take it for granted, that many cases occur in practice, in which either of these instruments may be used indiscriminately, with equal safety, advantage, and ease, allowing for the dexterity which may be acquired by the habit of using either instrument. But I do not recollect that those who have preferred the *forceps* have asserted that they could deliver a woman, in any case of difficulty not manageable with the *veētis*; and, as far as my experience enables me to judge, such

such a claim in favour of the *forceps* could not be supported. The debate on this point of the question has not turned upon the superior efficacy, but upon the greater safety and facility with which the *forceps* might be used. I have not heard of any case in which, after being foiled with the *vectis*, the operator was able to succeed with the *forceps*; though it is worthy of notice, that those who are accustomed to the use of the *forceps* only, think themselves at liberty to depreciate the *vectis*; and those who do not use them, speak of the *forceps* in terms bordering on contempt.

With respect to the second question, we will take the facts, and relinquish the arguments, used by those who have preferred the *vectis* to the *forceps*; which I allow sometimes to have been extravagant. If any confidence is to be placed in medical reports, it appears that many cases have occurred in which, after the introduction of the first blade of the *forceps*, it has been extremely difficult, or impossible, without the hazard of mischief, to introduce the second blade, and the operation has been performed with the single blade, used as a *vectis*. Of this I have known and been informed of several instances. It appears
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also, that before the head of the child has been so low down as was stated to be eligible for using the *forceps*, that the *vectis* has sometimes been readily applied, and safely and effectually used, when the necessity of some particular case required it. When the head of a child has been locked in the *pelvis*, the same necessity existing, when there was not space sufficient to admit the two blades, or more force perhaps been required than the *forceps* enabled us to exert, and we should otherwise have been compelled to lessen the head, it has been feasible to apply the *vectis*, and the patient has been safely delivered, with a probable chance of preserving the life of the child. Moreover, in all the deviations from that position of the head, which is most natural, as when it is turned with the face towards the *pubes*, or when the face presents, in which it is allowed that the *forceps* cannot be used with advantage or certainty; in all such cases, the *vectis* may be applied and used both with safety and efficacy. From this statement it may be presumed, that the *vectis*, prudently used, is, in every case, an equally safe and efficacious instrument with the *forceps*, and a better adapted instrument in
many

many cases which occur in practice. It is with this persuasion that several teachers of the art of midwifery in London, at the present time, never use the *forceps*, or speak of them in their lectures.

SECTION XI.

ON THE MANNER OF USING THE VECTIS.

By the first accounts it appears that the *vectis* was recommended, not only in such cases as were thought fit and suitable for the *forceps*, but to supersede the necessity of lessening the head of the child; it was, in short, asserted, that no other assistance could, in any case, be required, beyond that which we were enabled to give with the *vectis*. But if those accounts were allowed to be true, they would prove the miserable state of the principles and practice of midwifery at the time, and in the country in which they were written, in much stronger terms than they would describe the excellence of the instrument.

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The general condition and circumstances of labours before stated, as requiring the use of the *forceps*, will hold good, and with equal propriety, when the *vectis* is intended to be used; and the rules already given for the *forceps* will shorten what we have occasion to say respecting the manner of using the *vectis*. For though this instrument might be used when the head of the child was high in the *pelvis*, or even when that was firmly locked in the *pelvis*, in cases of great emergency, success in the management of such cases depending upon much previous knowledge and experience with the instrument, I dare not attempt to form a precise rule for the extent of our conduct with the *vectis*. But when, without regard to the facility with which the *vectis* may be introduced, or any other consideration except the necessity of the case, under the circumstances before stated, we have determined upon using this instrument, the patient being placed in the same situation, and every thing prepared as when the *forceps* are to be used, the operation is to be performed in the following manner :

Pass two fingers, or the fore finger of the right hand, to the ear of the child, and, introducing the *vectis* between the fingers and

the head of the child, conduct it slowly forwards till the point of the *veſtis* reaches the ear, wherever that may be. Then advancing the instrument as if it was a blade of the *forceps*, carry it on till, according to your judgment, the extremity of the blade may reach as far, or a very little beyond, the chin of the child; when the line of the head, on which the instrument rests, will be in a straight direction from the *vertex*, over the ear, to the chin of the child; and this is the most favourable position in which it can be placed. Then grasping the handle of the instrument firmly in the right hand, wait for the accession of a pain, during the continuance of which, raise the handle of the instrument gently towards the *pubes*, at the same time exerting a small degree of extracting force. When the pain ceases let the instrument rest, and when it returns repeat the same kind of action; and every time of acting endeavour to lessen the pressure on the soft parts of the mother, with the two fingers of the left hand placed in such a manner as to form, in some sort, a cushion on which the instrument may play. By a repetition of this action during the continuance of the pains, the head of the child will

soon be perceived to descend, and the face to turn gradually towards the hollow of the *sacrum*. But should the very moderate force we have recommended be found insufficient to bring down the head of the child, that must be gradually and cautiously increased, till it is sufficient to answer the purpose ; and this may be done consistently with the safety both of the mother and child. When the *vertex* begins to fill and protrude the external parts, it is probable there may be no farther occasion to act with the instrument ; or, if further action be required, it must be extremely gentle, taking all possible care, by turning the handle towards the *pubes*, by supporting the *perinæum*, and by slow proceeding, to guard against a laceration of the parts.

During the operation, the *veſtis* being confined to that part of the head where it was originally placed, must, as the head descends, necessarily change its relative situation to the mother, and be gradually turned from the *pubes* to the side of the *pelvis*, as was before remarked of the handles of the *forceps*.

It is also to be observed, though from the name of the *veſtis* it might be supposed we had the power of acting with it as a *lever* only,

that it will be found to possess a considerable degree of extracting force even when the curvature is but small ; and that we are able, at the time of using it, to direct with convenience, and in various ways, the head of the child as it descends.

In using the *vectis* some have directed us to apply it towards the hollow of the *sacrum* ; but I have persuaded myself that the opinion which could lead to this practice was erroneous, that the instrument would then be worked with less efficacy, and there would be a greater hazard of doing mischief to the mother and child.

It may lastly be observed, that some gentlemen have, by frequent practice, acquired such wonderful dexterity in the use of the *vectis*, as to finish the operation of extracting the head of a child with one single stroke of the instrument. But as I only pretend to describe a method of using the instrument with safety and efficacy, I may be excused from commenting upon all that has been affectedly or ostentatiously advanced upon this subject.

C H A P. IX.

S E C T. I.

ON LESSENING THE HEAD OF THE CHILD.

HAVING finished all the observations we had to make on the use of those instruments which have been contrived to answer the first intention in practice, that of preserving the lives of both the mother and child, we come to consider an operation yet more important, though the necessity of performing it far less frequently occurs. In this operation, being convinced that under certain circumstances it is impossible that both their lives shall be preserved, we feel ourselves justified in acting as if the child were already dead, as the only measure by which the life of the mother can be preserved.

This operation has ever been esteemed of the utmost consequence with regard to its principle and practice. The right or equity

of taking away one life for the preservation of another being doubted, the question was referred to divines, as the most competent judges of the case ; and by them it was decided to be unlawful to take away one life, on any account, for the preservation of another. The reference of the question may perhaps be considered as a proof that this operation had been performed too frequently, and the decision seemed actually to forbid it altogether ; but, as far as the general determination could be supposed to relate to this operation, there was sophistry in the statement of the question, if not in the reply. For by the first it was presumed that the child was always living when this operation was to be performed, though that could seldom be the case ; and by the latter it was allowed, that the authority of the decision might be suspended, if there was reason to believe that the child was already dead. It was for this cause that all the symptoms of a dead child, certain and equivocal, were collected and distinguished by authors with great assiduity and circumspection.

In cases of dangerous parturition the prerogative of deciding upon the life or death of the mother or child, was supposed by some to be

be inherent in the husband. This opinion is contrary to the rights and interests of society, and never could have satisfied the mind, or justified the conduct of any person who should have submitted to be governed by it ; nor do these cases admit of such election, for if the husband had preferred the child, his wish of preserving it at the expense of the life of the mother, could not have been gratified ; he at least could be no competent judge of the necessity of the case, and could claim no peculiar dominion over the lives of either of them.

True religion and the common sense of mankind appear to have nothing contradictory. The doctrine they teach of its being our duty to do all the good in our power, and to avoid all the mischief we can, is applicable to the exigencies of every state, and we may be easily reconciled to it on the present occasion. In some cases of difficult parturition it is not possible that the lives both of the mother and child should be preserved. Of the life or death of the mother we can, under all circumstances, be assured ; of the life or death of the child there is often reason to doubt when we are called upon to decide

and to act. The destruction of the mother would not, in the generality of cases, which may bring the operation of which we are speaking under contemplation, contribute to the preservation of the child; but the treatment of the child as if it were already dead, with as much certainty of success as is found in other operations, secures the life of the parent. It then becomes our duty, and is agreeable to our reason, to pursue that conduct which will give us the most probable chance of doing good; that is, of saving one life when two lives cannot possibly be preserved.

I forbear to inquire into the comparative value of the lives of an adult and a child unborn, because that does not seem to me to be the present question; and the subject has been in that view well considered*. But there is another argument to be drawn from the circumstances which sometimes occur in cases of laborious parturition, which applies with greater force towards justifying this operation in preference to any other, which might prove more hazardous to the mother, than

* See Dr. Osborn's Essay on Laborious Parturition.

any abstract reasoning. In all difficult labours, properly so called, especially such as are occasioned by disproportion between the head of the child and a small or distorted *pelvis*, one of the first effects of long-continued and strong pains, is the death of the child. The head of a dead child collapsing and admitting of pressure into a form more suitable to the dimensions of the *pelvis*, than a living one, will frequently be expelled through a space too small to allow that of a living child to pass. But after this change, which follows the death of the child, should the head remain too large, putrefaction advancing, the integuments of the head begin to decay, and the bones to loosen from each other. By the continuance of the action of the *uterus* upon the child the integuments of the head at length burst, and the bones being separated, the brain of the child may be evacuated through the opening. The bulk of the head thus lessened may be excluded by the force of the pains, and the body, impaired by an equal degree of putrefaction, may readily follow, and the labour terminate without the assistance of art. All these changes may be, and sometimes have been gone through with perfect safety to the

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the mother ; so that the artificial opening of the head of a child is, in fact, no more than an imitation in one case of what happens spontaneously in another, and such imitation is the true ground on which the whole practice of surgery has been founded. It may also be observed that the resources of nature, in every thing which relates to parturition, are infinite and constantly exerted for the preservation of both the parent and child ; yet when the two objects are incompatible, the life of the child is almost uniformly yielded to that of the parent.

From the number of signs of a dead child given by authors, and by the context of their writings, it appears to have been the practice, whenever the death of a child was ascertained, to use the means of extracting it ; or to have given medicines to excite and aid the constitution for expelling it, without any reason drawn from the present state of the mother, but to prevent remote danger. This practice corresponded with the theory of the ancients, that a living child was born by its own efforts, but a dead child, being destitute of all power, must be excluded by art. But no fact is more clearly proved than that of a
dead

dead child remaining in the *uterus*, inoffensively, for several weeks before the accession of labour, and being then expelled in a manner perfectly natural. No injurious absorption takes place, nor does the *uterus* suffer by being in contact with it. The certainty of the death of the child would not therefore indicate the necessity of the operation we are considering; but the reasons for, and justification of, it must be deduced from the state of the mother; and that state must be such as to prove her absolute inability to expel the child, and the impossibility of extracting it by any of those means which have been contrived for the purpose of delivering women, giving at the same time a chance of preserving the lives of children; together with the danger of delay. But as the signs of a dead child, if decisive, would, on many occasions, have their influence on practice, and might at least induce the most cautious and prudent man to hasten the time of performing this operation, which he might otherwise defer; and as the knowledge of these signs will lead to a more full investigation of the subject, it is proper to enumerate them; and to inquire at the same time how far each of them may be allowed

allowed to determine the fact which they are adduced to prove.

SECTION II.

ON THE SIGNS OF A DEAD CHILD.

I. RECESSION OF THE MILK, AND FLACCIDITY OF THE BREASTS.

SHOULD the child die when a woman is far advanced in her pregnancy, and before the commencement of labour, these signs are seldom wanting. But if they were to be offered as proofs of the death of a child destroyed by the severity of a labour, it would have been needful to have compared the state of the breasts at two specific times; first, on the accession of labour, when the child was living and they might be turgid; and, secondly, in the advanced state of labour when the child was dead, and they might have become flaccid. But as it is not customary to inquire into the state of the breasts before some suspicion is entertained of the death of the child, and as those of no two women, under any circumstances,

cumstances, exactly resemble each other, all indications taken from the state of the breasts must be uncertain, and any judgment, founded upon such indications, extremely liable to error.

2. COLDNESS OF THE ABDOMEN.

When children die towards the conclusion of pregnancy, women not unfrequently complain of coldness of the *abdomen*, and, at the instant of its death, there is usually one violent shivering. But when women in labour speak of this coldness, there is not actually external coldness, but a sense of it felt by the patient. A supposition that a dead child is colder than a living one, is the principle which gives to this sign its chief importance. But whether a child has been dead for a short or a long time, it is generally found to be of the same degree of heat with the *uterus* in which it was contained, and it is even hotter than the *uterus* while it is in the act of putrefying. The principle being fallacious, the inferences must often mislead, and a child is often born living, though the mother, before her delivery, complained of this coldness; which

which may be produced by some contingent circumstance, as the great heat of the room when she is in a profuse perspiration, or the sudden admission of cold air under the bed-clothes in winter. Little stress is to be placed on this sign alone, but, when accompanied with others, it may increase our suspicions of the state of the child.

3. MECHANICAL WEIGHT OF THE UTERUS.

If a woman in labour, or in the latter end of pregnancy, should feel the *uterus* fall with a sense of increased or unresisted weight, when she turns from one side to the other or changes her position, it is often surmised that the child is dead; all that resiliency observed to exist in every living body being lost. But this sense or effect may be explained in a more satisfactory manner from other causes, especially when a woman is in labour. Should the waters of the *ovum* be suddenly discharged, the *uterus* will contract till it comes into contact with the body of the child. But the integuments of the *abdomen*, not contracting with equal celerity, and the *uterus* wanting that support which they afforded when

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it was fully distended, must of course fall to whichever side the woman may turn. Should the waters be discharged slowly, or should the head of the child drop into the *pelvis* immediately after their discharge, there would not be this sense of unsupported weight whether the child were living or dead; because in one case the *uterus* would be held firm by the general contraction, and in the other, the child would be prevented from that kind of motion by its position.

When a child dies in the latter part of pregnancy the flaccidity and subsidence of the *abdomen* are considerable; but it is from a very great degree of these one is led to suspect either the death or wasting of the child, such subsidence being one of the natural changes which precede labours.

4. WANT OF MOTION OF THE CHILD.

The kind and degree of motion which may be caused by the child varies in different women, and at different periods of pregnancy. By some the child is scarcely ever perceived, and with others it is scarcely ever at rest, but it is often quiet a few days before,
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and in the time of labour. By the motion of the child its living state is ascertained; but the want of motion does not prove that it is dead, nor would it, for that reason, be justifiable to perform any operation which might be injurious to it, if living.

Some pregnant women have never been able to perceive the motion of the child through the whole time of pregnancy. Others have thought that they have felt the motion of the child, though the event has proved that they were not pregnant. Others have not doubted of the life of the child, though, after its birth, there were certain marks of its having been long dead. In long and very severe labours natural affection may be overcome by present suffering and distress, and women might conceal their knowledge of the motion of the child from the hope of a more speedy delivery. Every allowance must be made and every consideration had for human nature, humbled by infirmities and misery. The fears and affection of friends will also warp their judgment; but our greatest tenderness and the propriety of our conduct will be shewn, not by a compliance with requests and solicitations,

tions, but by following the dictates of our own reason and judgment, for we are not to be governed or alarmed with apprehensions of danger, but with its actual existence.

5. FOETOR IN THE APARTMENT OF THE PATIENT.

The putrefaction of the child would be an indubitable mark of its death, and might create a very offensive smell in the apartment in which the patient was confined; but every putrid child does not yield an offensive smell, and such smell may be occasioned by several other circumstances. If a child should die in the *uterus* from external injury, or any internal cause, and become putrid before the membranes of the *ovum* were broken, it would have a peculiarity of smell, but not that *fætor* which every animal substance emits, while it is in the act of putrefying under the influence of the open air. The *fætor* to which we now allude, can only appertain to a child which was living in the beginning of labour, and died in the course of it, after the discharge of the waters; and in such cases, when putrefaction does begin, it is commonly

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very

very rapid in its progress. The general smell of putridity in the apartment of a person in labour, is to be admitted with very great caution as a sign of a dead child ; for if the room be small, or crowded with company, or kept hot and uncleanly, or the common offices of life are performed in it, as is usually the case among people of the lower class, a similar effect will be produced as when the child is dead and become putrid.

6. FOETOR AND ILL APPEARANCE OF THE DISCHARGES.

The *fœtor* here meant is also supposed to arise from the putrefaction of the child, and the ill appearance to proceed from a mixture of *meconium*, sanious, or other matter which might be supposed to flow from a putrefying child, with the common uterine discharges. But the appearance of those discharges naturally varies in different women, according to their constitution, and to the qualities of the waters of the *ovum*. They become altered likewise by contingent circumstances as the casual retention of the discharge, or slight inflammation of the parts, which in

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some cases gives a strong scent to them, hardly to be distinguished from putrid *fætor*. With every appearance of the uterine discharges, children have been born living and healthy; and when they have been long dead, those have in many instances been so little changed, as not to raise suspicion in the minds of very experienced men; so that it appears that the proposal of any operation which would be injurious to the child, if living, would not be justifiable, merely on account of the smell or appearance of the discharges.

7. EVACUATION OF THE MECONIUM, WHEN THE HEAD OF THE CHILD PRESENTS.

Should a child present with the breech or inferior extremities, the evacuation of the *meconium*, which is an absurd name given to the excrements of the child at the time of its birth, is one of the proofs of such presentation. But when the head presents, if the labour be very severe or tedious, the waters will be tinged of a greenish colour, or pure *meconium* may be forced away, and, with such appearances, the child is often supposed to be

dead ; from a presumption, that if it was living, the *sphincter* of the *anus* would act with power sufficient to prevent any discharge. But by experience it is fully and frequently proved that a child may be born living, though the *meconium* should come away when the head presents, its evacuation proving no more than the weakness of the child, or the degree of compression it has undergone. The discharge of the *meconium* may also depend upon the quantity contained in the bowels, or some casual pressure upon the *abdomen*. We may however, in general, conclude, when the *meconium* comes away in a natural presentation, that the state of the child is not void of danger ; and for many years I never saw a child born living, when the *meconium* had come away more than seven hours before its birth. But at length, I met with a case, in which the *meconium* was discharged for more than thirty hours, at the end of which time, though the woman was delivered with the *forceps*, the child was born healthy and strong.

8. EMPHYSEMATOSE, EDEMATOSE, OR OTHER PECULIAR FEEL OF THE HEAD OF THE CHILD.

In many cases in surgery, information may be gained and the judgment assisted by what is called the *tactus eruditus*, or that faculty which enables us to perceive and discriminate by the touch, with greater accuracy than by any evident marks. It has also been said that we may decide in many doubtful cases, by the feel of the head, whether a child be living or dead. But as we know that in surgery, the most expert in this faculty are often mistaken, when they desert common evidences, so opinions, formed on such ground, would not authorize an operation to which they might be supposed to lead, in the question on which we are now speaking. For the integuments of the head of a child often become edematose to a considerable degree, from pressure in its passage through the *pelvis*; and emphysematose from a continuance or increase of the same pressure, when the child may, in all other respects, be perfectly well. If the integuments are squeezed

into a smooth, round form, that is said to be unfavourable ; but when they are corrugated, the tumefaction, though equally great, is thought to be of less consequence ; the former being supposed to prove the absolute detachment of them from the *cranium*. The original connexion of the bones of the head is such, as to allow of their being pressed close to, or over, each other with safety to the child ; yet when this has been long dead, and their natural connexion destroyed, they may be perceived to be loose and distinct. The state of the bones is frequently such as to leave no doubt of the death of the child, as well as the abrasion of the cuticle or the falling off of the hair ; but proofs of things self-evident are not wanted in practice, but such as will guide us in doubtful cases. Probably I have before observed, that whenever children die in the *uterus*, the greater the degree of putrefaction in which they are expelled, the more favourable is the indication to the mother ; shewing, I suppose, that the health and vigour of her constitution in general, and of the *uterus* in particular, are not impaired. But if a child should remain dead in the *uterus*, for any length of time, without becoming putrid, this

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circumstance might be considered as a proof that the powers of action in the mother were reduced to a state of dangerous weakness, as food remaining unchanged in the stomach would be a proof of the debility of that part.

Many signs of a dead child have been mentioned by authors, under the denomination of equivocal, as the livid paleness of the countenance of the mother, the offensive smell of her breath, and several others. But if it appears that those signs which have been called certain are in fact doubtful, it will follow, that very little reliance ought to be placed in those which are acknowledged to be equivocal. If, however, the propriety of performing this operation ought not to be decided by the certain knowledge of the death of the child, but by the circumstances of the mother absolutely requiring it for her preservation; then, the consideration of the life or death of the child becomes of less importance. Because if the operation, when really necessary, were not to be performed, the life of the child would not be saved, and that of the parent would be inevitably lost.

SECTION III.

ON THE CAUSES OF THE DEATH OF THE CHILD.

THE death of a child in the *uterus* may be occasioned by various causes independent of the mother, as by local inflammation or other disease of some part essentially necessary to its life ; by some original imperfection in its structure which may prevent its acquiring more than a certain size, or existing beyond a certain time ; by the smallness or morbid state of the *placenta*, hindering the proper communication between the child and the *uterus* ; by a partial or total separation of the *placenta* ; or, by the rupture of some of the large vessels which run upon its surface : by the vessels of the *funis umbilicalis* becoming impervious ; by the circulation through them being obstructed by the casual tying of a knot ; by untoward pressure of the body of the child upon the *funis* ; or
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by its becoming dropfical or otherwife difeafed.

The child may alfo be deftroyed by affections or difeafes of the mother, as by the fudden and violent impreffion of fear, joy, or other tumultuous paffion; by the irregularity of the parent's life; by fever; by improper or unwholefome diet; by any caufe capable of depriving the child of a proper quantity of nutriment, or depraving the quality of that with which it may be fupplied; or by accidents which produce fome pofitive injury upon the body of the child, through the integuments and parts with which it is invefted and naturally defended. Some of thefe are beyond the power of art to prevent or remedy, though others might by proper care and management be obviated or relieved; but at prefent we want only to difcover thofe caufes, of the death of a child, which may occur in the time of labour.

To the inconveniencies and danger which may arife in the courfe of a labour from the difproportion between the fize of the head of a child and the dimenfions of the *pelvis*, we muft fubmit; as no judgment or fkill can do
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more than teach us to wait patiently for the effect to be derived from the efforts of the mother, and the accommodating construction of the head of the child. And, though the degree of compression which this may undergo in a very tedious or difficult labour might be judged inconsistent with the safety of children, they will often be born healthy and vigorous, and the parents recover more speedily and perfectly, after such labours, than after those which were natural and easy. The same observation will also hold good of the resistance made by the soft parts to the passage of the child through the *pelvis*, unless their rigidity should proceed from local inflammation. But should the natural efforts be interrupted or subdued by fever, debility, or any other adventitious cause, or should there be local disease, the state of the patient would require the assistance of medicine or of art, according to the circumstances which might supervene. Yet it cannot have escaped observation, that far the greater number of those labours which have been considered as difficult, and which really were such towards the conclusion, were not in fact occasioned
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by the absolute state of the patient, but by interposition, and the desire of accelerating labours, which in their nature required a certain time for their completion. This interposition has chiefly consisted of two points of practice, both extremely reprehensible; the artificial dilatation of the *os uteri*, and the premature rupture of the membranes. By such practice the order of the labour becomes disarranged, and there often follow occasions to exercise art, for the relief of those evils which were originally caused by the improper use of art, to the great hazard of the parent or child. So long therefore as labours proceed naturally, they may be proper objects of our reason and judgment, but cannot be considered as the objects of art. But when they are proved to be beyond the efforts of nature to accomplish, the assistance of art becomes justifiable because it is necessary, and we may be reconciled to the fate of the child, if the life of the mother cannot possibly be preserved by any means consistent with its safety.

SECTION IV.

ON THE INSTRUMENTS USED IN THIS
OPERATION.

THE instruments with which this operation was antiently performed, do not appear to have been well calculated to answer the intention of the operator, effectually or safely. They consisted chiefly of hooks, differing in form and length, which were fixed upon any part of the head with the view of extracting it forcibly. It being sometimes found impracticable to fix a hook upon the head, other instruments were invented and used to make an opening in which a hook might be fixed, but without any intention of lessening the head. All these instruments it would be useless and tiresome even to enumerate; but it is remarkable that *Mauriceau*, a man of great experience and ability in his profession, should complain of difficulties in this operation which he could not surmount, from the want of proper instruments.

Perhaps

Perhaps there is no operation in surgery which admits of a more precise distinction, than this of lessening the head. It consists of three parts; perforating the cranium; evacuating the brain and *cerebellum*; extracting the head; and three instruments were commonly used for these purposes. The first was the scissars used by *La Motte*, altered and improved by *Smellie*; the second was in the form of a large spoon with serrated edges; the third was a hook or crotchet, straight or curved, to be used singly, or in pairs like the *forceps*.

Many years ago, *Savigny* the instrument maker, at my request, prepared two instruments which I supposed to be fully sufficient for this operation, the evacuation of the brain not requiring a separate instrument. The first was a *perforator* in the form of *Smellie's* scissars, the blade being slightly curved in the manner of the scissars used for extirpating the tonsils, but without any cutting edge, which is somewhat dangerous and altogether useless; the second was a crotchet with a little degree of curvature and a very small hook. The *perforator* measures about nine inches in length, and has a stop on each blade one inch
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and a quarter from the point. The crotchet, which has a wooden handle and a flat stem, should, when properly curved, be of an equal length with the *perforator*. These instruments, which are now almost in general use, are found to be very convenient and fully adequate to every purpose in the performance of this operation; and as the intention is well understood, and the instruments simplified, both the difficulty and danger of the operation are infinitely lessened.

Since these papers were sent to the press, an account of the invention and use of the *vestis*, by Dr. Bland, has been published in the *Medical Communications*. It is, perhaps, unnecessary for me to observe, that I have not yet read that account; so that whatever difference may be found in the two accounts may be ascribed to the opinions which, from experience, we have considered ourselves authorized to adopt.

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